substantially aligning with the primary axis of the limb, the first and second cells being longitudinally adjacent each other, and arranged coaxially with respect to the primary axis of the limb, the first and second cells being intermittently inflatable to apply pressure to the limb, wherein the inflatable cells each comprise inner and outer shells of durable flexible material, said inner and outer shells being bonded together about a perimetric cell bond to define the inflatable cell therebetween, said inner and outer shells being further bonded together along compartmental bonds within the perimetric cell bond to define the plurality of intra-cell compartments, wherein the perimetric cell bond includes upper and lower perimetric cell bonds extending substantially in a lateral direction, and left and right perimetric cell bonds extending substantially in the longitudinal direction, and wherein the compartmental bonds partly extend between the upper and lower perimetric cell bonds, wherein the compartmental bonds include perforations to allow for confluent air flow between compartments within a cell, neighboring compartments along a lateral axis sharing a common border and being spatially fixed relative to each other, such that upon inflation of a cell, the cell becomes circumferentially constricted, the first and second cells being non-confluent such that the first and second cells are separately inflatable;

A1 cont'd

means for laterally coupling outermost compartments so as to form a sleeve, such that the sleeve has a circumference of $N\pi r$ when the cell is deflated, and such that the sleeve has a circumference of $2Nr$ when the cell is inflated, where N is the number of compartments in the cell, and where r is the cross-sectional radius of each compartment when inflated, so as to provide for circumferential constriction;

inflating means for intermittently inflating the first and second cells; and

control means for determining the temporo-spatial regime of cell inflation.

30. The device of claim 29, wherein the fractional decrease in the circumference upon inflation is 0.36.

31. The device of claim 29, wherein the bond comprises a weldment.

32. The device of claim 29, wherein adjacent compartments are contiguous.

33. The device of claim 29, wherein the perforations are located adjacent the perimetric cell bond.

34. The device of claim 29, wherein the perforations are located between compartmental bonds extending from the upper and lower perimetric bonds.

35. The device of claim 29, further comprising a fluid inlet to provide for inflation and deflation of the cell.

A1 cont'd

36. An automatic portable ambulant system for applying pressure to a body limb comprising:

a sleeve including first and second inflatable cells, each of the first and second cells including at least three intra-cell compartments;

said intra-cell compartments being confluent, each compartment being elongated along a longitudinal axis and being substantially rectangular in shape when deflated and substantially cylindrical in shape when inflated, the longitudinal axes of the compartments being adapted to substantially align with a primary axis of a body limb, the first and second cells being longitudinally adjacent to each other and being adapted to be arranged coaxially with respect to a primary axis of a body limb, the first and second cells being intermittently inflatable to apply pressure to a body limb, wherein each inflatable cell comprises inner and outer shells of durable flexible material;

said inner and outer shells being bonded together to form a perimetric cell bond, said perimetric bond defining outer boundaries of an inflatable cell and boundaries between the inflatable cells, said inner and outer shells being further bonded together to form compartmental bonds, said compartmental bonds defining boundaries between intra-cell compartments, wherein the perimetric cell bond includes upper and lower perimetric cell bonds extending substantially in a lateral direction, and left and right perimetric cell bonds extending substantially in the longitudinal direction, and wherein the compartmental bonds partly extend between the upper and lower perimetric cell bonds, wherein the compartmental bonds include perforations to allow for confluent air flow between intra-cell compartments within a cell, the first cell becoming

circumferentially constricted when the first cell is inflated, the second cell becoming circumferentially constricted when the second cell is inflated, the first and second cells being non-confluent such that the first and second cells are separately inflatable;

means for laterally coupling the outermost intra-cell compartments within a cell so as to form a sleeve, the sleeve has a circumference of $N\pi r$ when the cell is deflated, and the sleeve has a circumference of $2Nr$ when the cell is inflated, where N is the number of intra-cell compartments within the cell, and where r is the cross-sectional radius of each intra-cell compartment when inflated, so as to provide for circumferential constriction;

a portable hand-held pump unit for intermittently inflating any one or more selected cells of the sleeve via a conduit, said pump unit including a control unit for determining the sequence of cell inflation and deflation.

A1 Cont'd

37. The system of claim 36, wherein said pump unit is battery operated.

38. The system of claim 37, wherein said pump unit comprises a rechargeable battery.

39. The system of claim 36, wherein said pump unit comprises an air compressor.

40. The system of claim 36, wherein said conduit comprises a single tube for delivering fluid to said sleeve.

41. The system of claim 36, wherein said conduit comprises means for indicating to said control unit an appropriate inflation and deflation sequence.

42. The system of claim 36, wherein said sleeve comprises at least one self-operated valve.